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ORIGINAL ARTICLES.

PROPHYLAXIS OF CONTAGIOUS DISEASES OF THE EYE.

BY PHILIP SKRAINKA, M.D.

ST. LOUIS, MO.

A question of paramount importance to-day is how to prevent dissemination of contagious eye diseases. That isolation is the best means has been shown by statistics collected by Derby in the State of New York since the passage of a law in 1886 requiring isolation. In 1886 the inmates of fifty-one institutions, numbering 12,684 in all, were examined, and of these 3,862 were declared to have contagious ophthalmia. In the New York Juvenile Asylum in 1886 the percentage of such cases was 17.7; but in 1902 was only 2.5. In 1886 the Five Points House of Industry showed 66.5% of contagious ophthalmia; in 1902 it showed only 4.4%. In the Catholic Protectorate in 1886 there were 40% of the inmates with contagious eye diseases; in 1902 there were but 3.7%. In 1886 the House of Our Lady of the Rosary showed 18.3% of contagious ophthalmia; in 1902 only 1.6%. In the House of Refuge in 1886 16.2% of the inmates were afflicted with contagious eye diseases, but in 1902 but 7% could be demonstrated. In St. Joseph's Asylum Roosa found 58.3% of trachoma; the examination in 1902 showed only 1.2% of such cases. Statistics show that about 19% of the candidates applying for admission to these institutions have trachoma; most of them have attended public schools and have aided in the

further dissemination of the disease. Inspection ordered by the Board of Health in two New York schools showed respectively 19.2% and 15.5% of trachoma cases. Derby recommends the examination of the eyelids of school children at regular intervals and the application to day schools of the methods efficacious in institutions where children are permanently lodged.

W. E. Lambert verifies Derby's statistics in his report of the New York Public Schools. Thirty-six public schools were inspected resulting as follows: Of 57,450 children examined, 6,690 were found to have some form of contagious eye disease, over 13%. Of these 2,328 were severe trachoma, 3,243 were mild trachoma, and 1,099 were acute purulent conjunctivitis. The percentage in the different schools varied from 3.2% to 22.2%, the boys showing a larger percentage than the girls; boys 3.6% to 28%, girls 1% to 18%. Lambert and Derby urged the eversion of the lid in examining children or others to determine the presence. These statistics show conclusively the necessity of legislation to prevent the spread of contagious eye diseases.

As regards other cities, reliable statistics are not available, on account of the neglect of the medical and municipal authorities to realize the moment of prophylaxis. This neglect on the part of the municipal authorities is easily understood; but why the medical profession should treat lightly a subject fraught with importance, especially when we recognize what bacteriological investigations have accomplished, is not so clear.

The Koch-Weeks bacillus has been shown to be the ætiologic factor in acute contagious conjunctivitis; the gonococcus of Neisser in gonorrhœal ophthalmia; the pneumococcus in acute conjunctivitis. The latter disease was first thought by Morax and Parinaud to be peculiar to early childhood, but the later investigations of Gasparini, Harold Gifford and others show that the affection is distinctly contagious, may attack adults, may be transferred from one eye to another, and may originate an acute inflammation of the conjunctiva, clinically very difficult to be distinguished from the Koch-Weeks bacillus, the causative factor of acute contagious conjunctivitis. The Klebs-Loeffler bacillus has been shown to be the cause of diphtheritic conjunctivitis, a non-purulent but distinctly contagious disease. According to Sattler and Michel, a small coccus has been cultivated from a trachoma follicle, and is supposed by them to be the cause of trachoma. Muttermilch has described a fungus which he terms *microsporon trachomatosum*, and claims to have pro-

duced trachoma with pure cultures in calves and rabbits. A parasitic protozoon has been described by Pfeiffer and Ridley. While as yet there is no proof, there is sufficient evidence at hand to lead us to think that the disease is microphytic in origin. Since the ætiological relationship of the various micro-organisms, of the various diseases of the conjunctiva, has been established, an avenue has been opened up by which an accurate means of diagnosis has been afforded to differentiate the various bacterial agents, the causative factors of the generic disease, purulent conjunctivitis. By a bacteriological and microscopical procedure in the hands of competent persons, prophylaxis has been simplified, and the means are at hand to-day to combat, in every community, the dissemination of contagious eye-disease. By the expression "means" I include not only bacteriological recognition, but also isolation. At the present time isolation and bacteriological investigation are made compulsory only when diphtheria is a systemic disease, but to my knowledge no report as regards diphtheritic conjunctivitis has ever been made to the local health department. Although isolation in systemic contagious diseases is recognized by municipal authorities and feeble attempts have been made by them to control their spread, the results while gratifying would be greater were isolation properly carried out. The importance of contagious eye disease, I regret to state, is not recognized either by the profession or by the laity. More than 1/5th (20.36%) of blindness is caused by ophthalmia neonatorum, trachoma and blennorrhœa. How are we to show the laity, the general practitioner, the municipality, the good that accrues from radical measures? The matter of primary importance is to enlighten the people so that the people may help themselves. First of all let them realize the nature of contagious eye-disease, its mode of onset, its course, its dangers to the eye infected and to the eyes of those with whom the patient comes in contact. Let them understand the conditions that favor a development and spread. Publicity is incalculable in educating the masses, prophylaxis is practiced, and treatment is not delayed. In regard to the general practitioner too much cannot be said about his negligence and laxity. On account of his inattention, the specialist often sees a case too late to prevent disastrous results, or to protect others from infection.

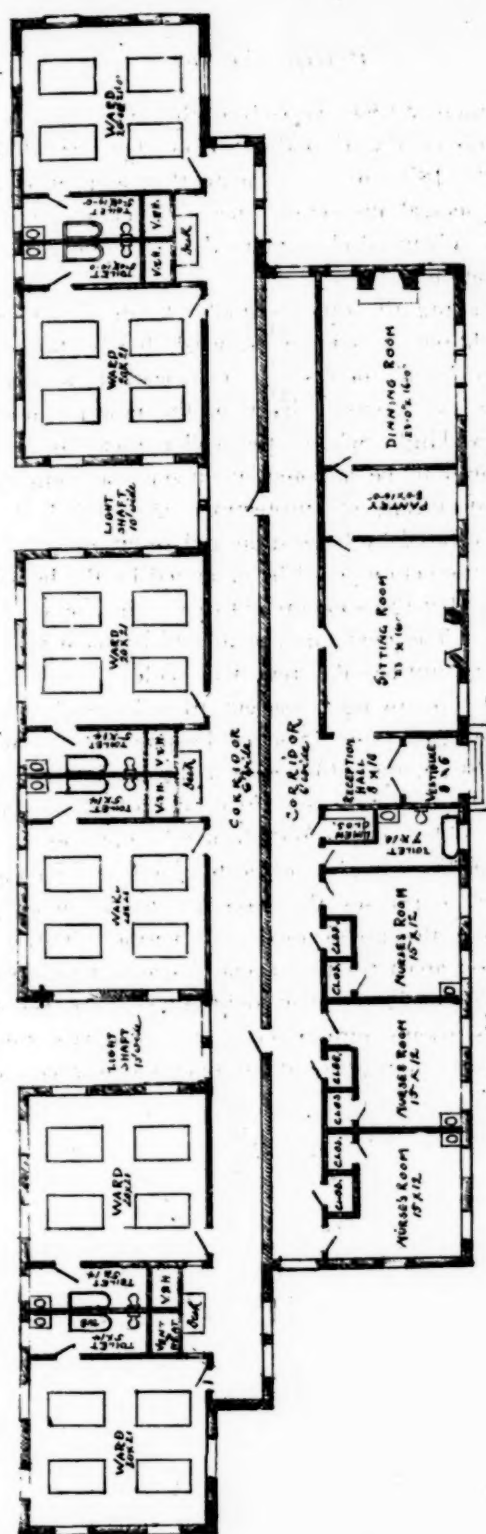
My idea is that the municipality should pass a law making compulsory, not only a report by the attending physician to the health department, but a bacteriological investigation by the

City Bacteriologist. In case the latter's examination indicates a contagious eye-disease; complete isolation—removal from home—should be enforced. Moreover, valuable statistics, now lacking, could be compiled in St. Louis. The applicability of this law as regards residential schools, orphan asylums, barracks, public institutions, and especially our public schools, cannot be questioned.

To do all this municipal legislation is absolutely essential. At present such legislation is unknown; our schools are not visited by medical inspectors, our hospitals are ill adapted for cases. Dividing the territory between Grand avenue and the river by Market street, we find on the north side 21 public schools, on the south side 26.

I herewith present a table showing number of pupils enrolled in each school, Dec. 13, 1904:

SOUTH.		NORTH.	
Pope	1,468	Shields	1,301
Lincoln	1,017	Jefferson	1,426
Laclede	523	Columbia	1,116
Madison	1,369	Franklin	652
Clinton	1,177	Carr	512
Chouteau	1,189	Carr Lane	919
Gallaudet	40	Divoll	836
Wyman	1,066	Stoddard	943
Hodgen	628	Penrose	842
Peabody	1,024	Hamilton	415
Carroll	1,036	Jackson	1,270
Pestalozzi	815	O'Fallon	899
Humboldt	1,198	Douglas	719
Lafayette	877	Webster	1,264
Allen Avenue	205	Blair	1,152
Charless	1,353	Howard	524
Lyon	1,070	Ewing	1,293
Freemont	1,041	Elliott	978
Shepard	838	Clay	1,305
Garfield	1,100	Ames	1,265
Grant	905	Yeatman	
Monroe	978		
Meramac	394		
McKinley			
Froebel	991		
Mt. Pleasant	571		
	<hr/> 22,873		<hr/> 16,487



This sum total, 39,360, as well as the unhygienic and unsanitary conditions of the Franklin School, built in 1857; Carroll, 1866; Laclede, 1870, would indicate that legislation as regards compulsory medical inspection once a week could not be construed by the advanced element in the community, into a matter of supererogation.

After visiting the older schools, I am convinced that the existing conditions, roller-towels, wash bowls, basins, used indiscriminately by all pupils, are provocation, to say the least, of contagious eye-disease. Even in the newer schools such as the McKinley High School the roller-towel is in evidence. Granted a child to be a potential citizen the municipality must offer the best means of protection, and the best means of protection is offered by legislation and isolation.

Medical inspection could be arranged by the board of health in such a way that the appointment of a small force of physicians would suffice. The next question would be what to do with the case directly an unfavorable report is made. The answer to this is isolation by removing a patient to a hospital specially constructed for the purpose. Such a hospital is still an unknown quantity in St. Louis. Our newer hospitals have no special building for the isolation and treatment of all contagious eye-diseases; the older ones offer absolutely nothing.

I present here a plan of a building for contagious eye-disease, which expresses the modern idea of what a hospital should be, and the importance of isolation. Three wards on one side are set apart for the special diseases, trachoma, ophthalmia neonatorum and purulent ophthalmia. On the other side are the nurses' rooms, dining room, etc. The two sides are separated by a wall having two doors opening on a corridor on the respective sides.

THE VALUE OF A ROUTINE USE OF THE X-RAY IN
ORBITAL AFFECTIONS ARISING FROM
ACCESSORY SINUS DISEASE.

BY HENRY GLOVER LANGWORTHY, M.D.,
DUBUQUE, IOWA.

A considerable number of papers have appeared in ophthalmic journals during the past two years on the relationship of accessory sinus disease to various orbital affections. Few, however, have mentioned, and not a single one of them emphasized, the importance of a routine use of x-ray plates of the nasal sinuses in all orbital troubles of doubtful origin. The rhinologist has done much more to solve these borderland problems than his co-worker, the ophthalmologist.

The method of transillumination usually most satisfactory is a very great help and can never be supplanted. The recent advent of the x-ray findings, however, is our greatest step forward. It is rather rare in surgery, as has been pointed out by Prof. Dr. Killian and Hajek in Europe and Coakley and Mosher in this country, for the surgeon to have beforehand an almost exact knowledge of the size, situation and outline of the structure, the difficulties to be encountered, and in many cases the indubitable presence of pus or some foreign material within the sinus which he wishes to attack. It is a simple task, as a rule, to determine whether transillumination shows a darkened area in a situation where it may normally not be expected. If the under eyelid, malar region and pupil of one side are brightly illuminated, while the corresponding regions of the other side are either dim or not illuminated at all, any one would be positive that there was some condition on that side of the face to account for the obstruction to the rays of light. In like manner, the same comparative estimate of density of illumination is applicable to the frontals. Interpretation of the x-ray plate, however, is not so easily acquired without experience. Properly explained, it becomes no more difficult perhaps than the detection, much less localization, of minute foreign bodies within the eyeball. One needs only to be sure (in frontal or ethmoid cases) that the best picture possible has been obtained. Poor plates should be instantly rejected. The picture presented is best described by Coakley¹ of New York, "In all cases of unilateral disease of the frontal sinus verified by operation, we have observed a cloudiness in parts or all of the area occupied by the sinus and an

indistinctness in the outline of the cavity when compared with the opposite or healthy side. The appearance is not unlike that of 'fogging' in a plate."

The same applies to the ethmoid region, besides giving the height and width of the area. The cloudiness in cases of suppurative ethmoiditis, or in association with many polypi, is even more marked than in the frontal sinus. Chronic suppurative processes in the antrum of Highmore also present a filmy appearance though less constantly. In Mosher's² antrum cases the x-ray has not been as valuable as have skiagraphs of the other sinuses. Beyond the data of the projection of the tooth roots only about one-half of his cases showed the presence of pus. According to Jack³ the reliance to be placed upon skiagraphy has not been determined. The importance of plates in sphenoidal trouble has also still to be developed. The field certainly is not a very favorable one.

I have studied a considerable number of plates from which a diagnosis of pus within both the frontal sinus and ethmoid labyrinth on the same side could be made and operation steadily bore this out. In the type of cases seen by the ophthalmologist, in which the ethmoid has already perforated into the orbit, causing an orbital tumor, divergence and exophthalmos, the x-ray plate was rarely misleading. These are the cases too where a nasal examination is negative, no pus being discovered in the region of the middle turbinate.

Lateral views are not of as great value as the antero-posterior plate for the reason that it is quite often impossible to decipher the former. Again, the respective sides of the head are seldom alike.

To recapitulate: Holding the plate of the face (antero-posterior) up to a good light the ethmoid and frontal region on one side is carefully compared with that of the opposite half. In a normal sinus one gets a clear general outline of the sinus wall and an excellent relatively clearer space within. In a diseased sinus full of pus the side affected is more opaque than the free side and sometimes practically obliterated. The result of this process of "matching up," so to speak, is finally applied to the case at hand. The best plan always is to take the plate at random, as it were, and make one's deductions without a thought of the orbit known to be involved. This rapidly gives the needed confidence.

It would be a mistake to claim that such a method is infallible. It is possible to get an occasional condition of sinusitis in which the pus as such has become liquified, absorbed and finally replaced by blood products as transparent as the normal tissue.

In concluding it may be worth repeating that when there is an orbital tumor or exophthalmos, the result of extension from the frontal or ethmoid region, by far the best procedure is the radical Killian frontal sinus operation. As the eye specialist should know at least the general character of the operation, I think some attention should be paid to it. Roughly, the method is as follows: The eyebrow is not shaved. The usual frontal incision, beginning at the middle of the brow, is elongated and carried down the side of the nose and the cut nicked for better coaptation. The outer wall of the frontal sinus is removed, with the exception of a narrow bridge of bone (its periosteum attached) along the rim of the brow and root of the nasal bone. This bridge of bone is very important and prevents deformity. A portion of the inner orbital wall is next resected. Through these two bone openings the floor of the frontal sinus can be easily removed and the ethmoid cells curetted out. The middle turbinate is also punched out. With this operation there is no deformity in small sinuses and very little even in large ones. With the frontal and ethmoid region thrown into one cavity communicating with the nose the after care following the first week is almost nil. Strange to say, the pulley of the superior oblique muscle, even if injured, does not cause the slightest trouble. The lacrimal sac can also be turned out of its fossa without harm.

The whole subject of x-ray in the special fields is most interesting, and there yet remains much to be developed.

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A CASE OF SYMPATHETIC OPHTHALMIA THIRTY-SEVEN YEARS AFTER THE INJURY.*

By. D. D. SULZER.

(Translated by Adolf Alt, M.D.)

D. L., 40 years old, a salesman, consulted us at the Fondation Ophthalmologique A. M. Rothschild for the first time on December 12th, 1906, on account of an inflammation of the right eye of 6 days' duration.

The previous history was uneventful. He had had no rheumatism, syphilis, or tuberculosis.

At the age of three years he had stuck a pair of scissors into his left eye. In consequence of this injury the eye had become shrunken. This stump was never painful, neither spontaneously nor on pressure.

On December 6th, 1906, that is 37 years after the injury, the right eye became red, teared, grew dim, and the patient complained of violent ocular and periorbital pains and of lightning flashes.

December 12th (first examination).

L. E. The bulbus is reduced to half its size. It seems to contain calcareous bodies, but it is not the seat of any inflammation or of pains, either spontaneous or on pressure.

R. E. Symptoms of iritis, synechia, precipitates on the posterior surface of the cornea, the vitreous body is diffusely opaque. V=5 gr. Atropine, belladonna ointment, quinine.

Dec. 13th. V=fingers at 1 metre. Subconjunctival injections of oxycyanide of mercury.

Dec. 14th. V=1 to 2 gr.

Dec. 15th. Intense circumcorneal injection. The pupil is retracted, the aqueous humor is turbid, the iris is very hyperæmic, the vitreous body very dim. The left stump remains perfectly quiet.

Dec. 18th. The pupil is dilated, but irregular. The dimness of the media is increased. He counts fingers at $2\frac{1}{2}$ metres. Subconjunctival injection.

Dec. 19th. The media grow clearer. V=fingers at $3\frac{1}{2}$ metres.

Dec. 20th. Pupil wide.

Dec. 24th. Periorbital pains on the right sight. (sympathized eye). The left stump remains insensitive to pressure. V=1 gr.

*Annales d'Oculistique, Février, 1907.

Dec. 26th. The vitreous body is clearing up. V=3 gr.

Dec. 27th. The iris is still very hyperæmic. V=5 gr.

Dec. 28th. V=4 gr. Subconjunctival injection.

Dec. 29th. V=5 gr.

Dec. 31st. The right eye begins to get white. V=6 gr. Ophthalmoscopically the deep membranes appear normal.

A second light attack of iritis on the first or second of January has fastened the pupil in semi-dilatation. At the same time a focus of exudative choroiditis appeared in the periphery.

The sympathetic ophthalmia by itself has no clearly cut symptoms which characterize it as such. Even without any previous injury we see chronic or acute forms of choroiditis develop, causing the same chronic and anatomic symptoms as does the sympathetic ophthalmia. They are due to general infections and are rare. The observation here recorded is distinguished from the great majority of sympathetic ophthalmias by its short duration, the re-establishment of vision, and the absence of pain.

In the absence of all other known causes, we are forced to attribute the uveitis of the right eye to the presence of the left atrophied globe. Stumps containing osseous plates are, anyhow, especially dangerous as to the production of sympathetic ophthalmia. For a long time the presence of pain was considered to be an indispensable element in the production of sympathetic ophthalmia. This conception seems to have sprung rather from a theory than to be in conformity with observed facts. Having instituted the theory of the nervous action, localized in the ciliary nerves, the ciliary pains were made a condition *sine qua non* of an imminent and an established sympathetic ophthalmia. When there was a question of whether to remove or preserve an atrophied globe, the presence of spontaneous ciliary pains or on pressure was often the deciding element. To-day cases of sympathetic ophthalmia having come on without any pain are uncontested and uncontestable. In connection herewith permit me to communicate to you the following observation:

L. A., 33 years old, a mason, a strong, healthy individual, free from all taint, came on May 3d, 1905, to the Fondation Ophthalmologique A. M. Rothschild, complaining of a marked diminution of vision in the right eye, which had begun about a week before. The left eye had been blind for two months from an accident. This left eye presents a cicatrized prolapse of the iris up and outward. It was produced, according to his statement,

by an injury with a piece of wire on March 1st. This eye is perfectly white and free from all irritation. On close inspection we find that there had been a penetrating wound about three millimetres long just across the cornea-scleral junction, having given rise to an iris prolapse. The iris is glued down to the anterior lens capsule, and a thin exudate fills the displaced pupil. The cornea is transparent and there are a few deposits on its posterior surface. The intraocular tension is not particularly reduced and pressure on the ciliary region does not cause any pain. The eye has been painless ever since the beginning of the affection. After the first violent pain had passed away the patient felt only a slight discomfort, so slight in fact that he continued working and even neglected to report the injury. Only ten days ago, when the sympathized right eye began to get dim and to tear at times, he noticed that the injured eye had lost its vision. This eye counts fingers at two metres, while the sympathized eye has a visual acuity of three opts. On May 1st the patient for the first time noticed a mist-like veil before the right eye. This eye is not red, has never been painful and the patient has never had headache. The iris is free and the pupil reacts normally. The ophthalmoscope shows a diffuse and deep-seated dimness in the vitreous body. The sympathizing eye, the left one, is carefully washed and the scar is covered with a conjunctival flap. Inunctions with Neapolitan ointment, subconjunctival injections, atropine, etc. In spite of all care the sympathetic inflammation grows worse, so that on June 3d the sympathized eye counts fingers at 40 centimetres only, while the sympathizing eye still sees them at 2 metres. On June 29th both eyes become simultaneously affected with an acute, painful iridocyclitis which lasts four weeks. On July 24th a slight clearing up of the media is noticed in the right; the sympathized eye. This eye counts fingers at 4 metres, while the left eye only sees them at 50 centimetres. After several inflammatory relapses the patient can finally see 3 opts with the right eye on September 19th, 1905, while the left eye counts fingers at 80 centimetres. Both pupils are inactive from posterior synechiae.

To return to our first observation, we certainly believe that we can consider the affection of the right eye as belonging to the class of sympathetic ophthalmias. This affection was provoked by a painless globe, atrophied for 37 years. Of course, we shall enucleate the atrophied eye. Whatever may be the advantages an atrophied globe may present when compared with

an empty orbit, they must not be gained at the expense of the fellow-eye. The question whether to enucleate an eye in a given case is often difficult to solve. Yet a series of facts, recently published, show clearly that the enucleators "were not as much in the wrong" as de Wecker at some time pretended them to be. Every atrophied globe, even when perfectly painless, can at a given moment become dangerous. The very fact that it is atrophied shows that it has previously been the seat of an iridocyclitis, and every iridocyclitis can sooner or later give rise to a sympathetic inflammation.

OBITUARY.

EMILE JAVAL.*

BY DR. F. TERRIEN.

(Translated by A. Alt, M.D.)

French ophthalmology has just lost one of her most distinguished representatives, Emile Javal, who died on January 20th after a long and painful illness.

Born at Paris, in 1839, former pupil of the School of Mines, it is possible that medicine should never have had any attraction for him, had he not accidentally had occasion to consult von Graefe during one of his journeys to Paris, on account of one of his relatives who had strabismus. Thus being led to oculistic, he brought to its study a mind wonderfully prepared by previous labors to work on the optical and dioptric questions of the eye.

The translation of Helmholtz' *Physiological Optics* was the first of his publications. It is not one of his smallest merits that he thus introduced this remarkable treatise to France. Herein, also, lies the origin of his ophthalmometrical researches.

Helmholtz' ingenuity had given us an excellent instrument. This illustrious physician had succeeded in measuring with his ophthalmometer not only the curvature of the cornea, but also that of all the refracting surfaces of the eye with their exact localization and even their index of refraction.

For the two glass plates with parallel surfaces and movable which constitute the principal part of the ophthalmometer of Helmholtz, Coccia had substituted a crystal with double refraction.

*Archives d'Ophthalmologie, Feb., 1907.

tion. It remained for Javal to employ this principle for measuring the first refracting surface of the eye and to give to the clinic a practical instrument for keratometry. With the aid of his pupil Schioetz, he presented to the London Congress in 1881 the first instrument of this kind bearing his name.

From this time on and for the ten following years he published many papers, the crowning one of which are the *Memoirs of Ophthalmometry*. And it was Javal's great merit, that he tried incessantly to make the instrument he had first invented more and more perfect. Thanks to the tenacity and patience with which he was gifted, thanks to his mind always trained and directed to the practical side of things, he knew how to generalize his ophthalmometer and to make it useful for everybody. In this he has done a great service to ophthalmology.

At the same time with these ophthalmometric studies Javal, whose mind was naturally directed rather toward optical questions than the clinical part of ophthalmology, began to study strabismus and the optical means of its correction. Struck by the insufficiency of the operative results obtained with the first procedures of Dieffenbach and Bonnet, he published in his graduating thesis, in 1868, his new method of treatment by means of optical correction and stereoscopic exercises. And during the following twenty years, by multiplying his observations and with an untiring patience he perfected his method aiming at the re-establishment of binocular vision and correction of the deviation. The appearance of the "*Handbook on Strabismus*" was the result of these labors.

He undoubtedly exaggerated. We must not overlook that, due to the improvements in operative procedures and their precision, the treatment of strabismus remains essentially a surgical one. On the other hand, with his high scientific truthfulness, Javal himself has acknowledged this when he came to the conclusion that in the interest of the patient and physician alike "we must strictly demand of the exercises, what the operations are unable to do."

Thus put into its proper place the orthoptic treatment so admirably perfected by Javal, is of considerable importance, as much for straightening a slight deviation in its beginning as for re-establishing binocular vision after the surgical intervention and to complete the operative act. Through this, also, Javal has rendered ophthalmology a signal service.

Finally, struck completely blind when 62 years old by bilateral glaucoma, Javal did not allow himself to be broken. In 1905 he published his "Physiology of Reading and Writing," and in 1903 his little volume, "Among the Blind," which was at once translated into several languages. Aside from the councils given to individuals who have just lost their vision and to their friends, we find in it a touching sentiment. He says: "If these pages serve to lighten a misfortune like mine, fate will have vouchsafed me a great consolation."

He advises the physician to prepare the patients who are going to be blind gradually for their lot, in order to make use of the last little bit of sight to organize the mode of living with a view to the final loss, and to learn the first elements of the writing after the method of Braille. This advice, which is hard to follow, we believe will be valuable in but very few of the cases. For it is especially hard for the physician to tear away from his patients the supreme consolation which he always can give when his efforts remain unsuccessful, the illusion and the hope of a cure.

Nevertheless, such people may find in this little book, which terminates a life well rounded out, precious admonitions and perhaps an example, when the author, speaking of the psychology of the blind, advises them with a serene philosophy "to direct their thoughts to those who in their darkness are at the same time afflicted with deafness and given over to misery and solitude, instead of sinking into a dire despair and to compare their lot to that of the clairvoyants."

OCULAR MANIFESTATIONS OF TRYPANOSOMIASIS.

Morax (*Annales de l'Institut Pasteur, Paris*, Last indexed, page 649) notes the frequent occurrence and the characteristics of the ocular manifestations occurring during the course of infection of animals with trypanosomes. The microorganism proliferating in the spaces between the corneal layers sets up an interstitial keratitis, causing infiltration of leucocytes, and may totally disorganize the cornea in some cases while in others the trouble may disappear, leaving hardly a trace. In animals possessing strong resistance to trypanosome infection the keratitis usually subsides without the destruction of the eye, while others not having this resistance always died while the cornea was still entirely opaque.

MEDICAL SOCIETIES.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

February 14th, at 8 p.m.

VICE-PRESIDENT, MR. R. W. DOYNE, in the chair.

Paralysis of the Vertical Movements of both Eyes; Haemorrhage about the Corpora Quadrigemina.—Mr. Ludford Cooper.

This patient was a man, who was quite well till March 14th, 1906, when at 4 a.m. his wife noticed that he was breathing very heavily, and he was found to be unconscious with flushed face and no corneal reflex; these symptoms disappeared in the afternoon when he regained consciousness. On March 16th he was sitting up, but his manner was excitable and his speech rambling. The pupils were equal and acted well; the movement upwards was deficient in both eyes, and all reflex movements of the eyes were lost; there was no diplopia, and both fundi were normal. Knee-jerks were absent. No history of syphilis.

He was admitted to the Hospital at Rochester on April 3rd, 1906, when his mental condition was much improved. The ocular muscles showed the same defect as before. The vision, with correction, was normal in each eye, and the fields were full. The reflex movements of the eyes showed signs of returning. On April 25th and on April 30th, there was free movement vertically when fixing an object, but voluntary movements were completely absent.

Siderosis of the Eyeball.—Mr. A. Stanford Morton.

J. W., aged 54, was admitted to the Royal London Ophthalmic Hospital, in December, 1906, with the history that 2 years ago he was breaking stones with a hammer when something flew up and struck his right eye; the sight was affected immediately afterwards. During the succeeding week he had some pain and lacrimation, and attended the Bedford Hospital. One month later the sight of the left eye began to fail, so that 3 months afterwards he was unable to find his way about the Hospital unaided.

On examination a small scar was found near the outer margin of the right cornea, the iris was a greenish grey color with

a small opening in its structure opposite the corneal scar; the pupil was dilated and inactive to light; lens clear.

The fundus appeared atrophic and of a lightly yellowish hue; there was advanced disease of the retinal vessels, much more pronounced in the arteries than in the veins, which were thickened. There was some atrophy of the retina with numerous more or less angular masses of brown material, outlined by white, lying in it. Downwards and outwards from the disc was a sharply defined foreign body surrounded by altered blood-clot. The eye had barely perception of light.

The left pupil was inactive to light, but acted with convergence. There was no iritis nor old cyclitis. The optic disc was atrophic, the retinal vessels reduced in size, and the veins bordered with white lines; the vision was only perception of hand movements.

There was no evidence of changes in the central nervous system.

A Case of Polycoria Associated with Chronic Glaucoma.—Mr. Malcom L. Hepburn.

Geo. C., aged 61, came to the London Hospital early in January, 1907, under the care of Mr. Lister. He complained of dimness of sight which he had noticed for the last 8 weeks, though for the last 3 years he had observed occasionally colored rings round lights. There was no pain, and no other subjective symptoms, nor was there anything wrong with the eye before, with the exception of the peculiar appearance of the iris, which he states had existed since birth.

R.V. 6/36, no H.M.; L.V. 6/18, with +1D sph.=6/6 pt.

The left eye was normal in every respect. The right eye showed a complete oval-shaped pupil, placed down and in, which reacted to light; the part between the pupil and the periphery was made up of 5 triangular bands, the broadest being situated downwards and inwards, enclosing between them clear spaces through which the fundus could be plainly seen. In addition to these bands, there was also an almost complete ring of pigmented tissue situated at the angle of the anterior chamber, less marked above, and on the outer side this appeared to be in contact with the posterior surface of the cornea. On the outer side, too, behind this rudimentary stump of tissue, was a large mass of pigment into which passed some of the fibres belonging to the septum beneath

which it was situated. The patient states that the pupil was originally central. The fundus showed typical glaucomatous cupping, the field was contracted, especially on the nasal side, and the tension was +1.

Two explanations of the abnormality of the iris suggest themselves; one is that the iris was originally complete, but that by process of inflammation or atrophy, spaces were formed in the iris tissue; the other is that faulty development accounts for the defect. The latter explanation is probably the true one, but we must assume that the iris was developed from a number of separate processes of mesoblastic tissue growing forwards between the lens and the posterior surface of the cornea, which coalesced to form the pupil.

As regards the occurrence of glaucoma in these cases, somewhat similar cases have been met with where the same condition has supervened in subjects with aniridia. The whole subject has been discussed by Mr. Treacher Collins (*v. Transactions of the Ophthalmological Society*, vol. xiii., p. 128, and *Ophthalmic Review*, vol. x., p. 101). Six cases are there described, three of which were of traumatic origin, and four were subjected to microscopical examination, and it was shown that the glaucoma is always produced by the blocking of the angle by the stump of rudimentary iris. It is possible that the actual cause of the glaucoma in this case was the blocking of the angle by the rudimentary stump of pigmented tissue which was seen at one part to be in contact with the back of the cornea, and that the various septa had very little to do with the occurrence of increased tension.

In the discussion which followed on this case, Mr. Lister mentioned the various groups already met with into which this class of abnormality might be divided, and Mr. Treacher Collins suggested that the abnormality of the iris might be explained by loops of blood-vessels pushing themselves forwards in the developmental stage, some of which failed to continue their progress, and thus caused gaps between the other fully-formed septa. The only treatment suggested of an operative nature was an anterior sclerotomy.

Case of Tuberculosis diagnosed from the Ophthalmoscopic Appearance of the Fundus.—Mr. Warren Tay.

This was a description relating to a child who came under the care of Dr. Semple at the North-Eastern Hospital for Children in 1884, and which Mr. Warren Tay saw.

Dr. Semple recorded the case in the *Medical Press and Circular* in 1885, and a sketch was published in the *Transactions of the Ophthalmological Society*, 1885, in a series of cases described by Mr. Lawford.

There was a history of 4 months' illness, and the child was first treated for acute nephritis; 3 months later it had hemiplegia and aphasia, and 14 days afterwards there was pain in the head which increased in severity, and the child became apathetic, anæmic and drowsy, was admitted to the Hospital on November 17th, 1884, and died on the 28th.

Chorio-vaginal Vein in a Myope.—Mr. George W. Thompson.

M. S., aged 17, was seen in February 1902.

R.V. $\frac{-20 \text{ sph}}{-2 \text{ cyl}} = 6/18$ L—22D=6/24.

The left eye was needled twice; and on January 10th, 1903,

L.V. 6/12; 3—.5=6/9 pt.

In the fundus of the left eye was seen a broad vein beginning in a few branches between the macula and the optic disc, it then looped down by the superior temporal vessels, and suddenly dropping backwards disappeared from view.

In the subsequent discussion in connection with this case, Mr. Coats and Mr. Treacher Collins pointed out that, inasmuch as the vein did not take the usual course of a chorio-vaginal vessel, viz., from the posterior pole towards the optic nerve, passing thence down into the sheath of the nerve, it could be hardly regarded as a vessel of that character; but it was rather a posterior vortex vein running a somewhat abnormal course.

Hyaloid Artery partially Patent, associated with Remains of Posterior Fibro-vascular Sheath, and Ciliary Processes on the Posterior Surface of the Lens.—Mr. George W. Thompson.

This was the case where the patient's right eye, the vision of which was 6/60, showed a partially patent hyaloid artery; the posterior third of its course was wavy and of darker color, anteriorly it ended on the posterior surface of the lens as a white, non-vascular membrane. There were also seen 4 ciliary processes curling round the circumference of the lens, the upper two being much elongated and attached to the remains of the fibro-vascular sheath, the lower ones appeared to be fixed to the back of the lens.

A Retinoscopy Long-arm.—Mr. J. H. Tomlinson.

This was a device by which lenses could be mounted on a long handle, and in this manner held in front of a child's eye so as to conduct the retinoscopy at a convenient distance. It was claimed that the refraction could thus be more easily measured in the case of children than by the usual methods as the mother could also assist by adjusting the end containing the lens so that it should be always in contact with the child's face.

A Case of Detachment of the Retina in which Recovery followed Scleral Puncture.—Mr. W. H. McMullen.

E. G. H., male, aged 37, was first seen on August 27th, 1906, when he complained of defective vision in the right eye which came on suddenly one week previously; there was no history of injury, but he had always been shortsighted and had worn glasses for 10 years. Two days before losing his sight he had noticed some specks in front of the right eye.

R.V., barely counts fingers at 25 c.m.

L.V., 6/60, with -4.5 sph. = 6/6.

A chart of the field of vision at this time revealed a large defect at the lower and inner part, including the fixation point; this corresponded with an extensive detachment of the retina seen with the ophthalmoscope upwards and outwards, best focussed with a $+8$, the rest of the fundus being visible with -4 . The eye was bandaged; and on September 4th, after one week's rest, injections of pilocarpine were administered, but with no improvement in the condition. Scleral puncture was then resorted to between the superior and external rectus, as far back as possible; the Graefe's knife was introduced only 2—3 mm. A pressure bandage applied to both eyes. The next day the detachment had quite disappeared, but ten days later the patient had to be removed from the Hospital, and the journey caused a recurrence so that on September 16th the scleral puncture was repeated, with the result that on the following day there was nothing to be seen of the detachment, only a whitish area, slightly pigmented, situated upwards and outwards. Rest on the back with both eyes bandaged was the treatment for 2 months; and at the end of that time the vision with -3.5 sphere was 6/18.

A Case of Neuro-retinitis.—Mr. G. H. Pooley.

N. D., aged 20, came for advice because the vision in the left eye had failed suddenly 2 months ago, and returned 2 or 3 days later.

On examination the pupils reacted to light, and the tension was normal.

R.V., 6/6 H.M.+75D. L.V., Hand movements.

By the ophthalmoscope, the left disc was seen to be pale, and raised above the level of the rest of the fundus to the extent of one millimeter; it occupied the central part of a raised cone which extended as far as the mid-point between the disc and the macula. There were also some typical neuro-retinitic changes at the macula, and at the periphery the retina was pale with some spots of exudate and streaks of pigment. The retinal vessels were very small. The right fundus showed a pale disc and small vessels but no swelling; there was a V-shaped unpigmented patch in a highly pigmented area at the macula; and in the periphery there was much the same condition as in the left eye but less marked. There was nothing definite in the general health beyond some chlorosis with hæmic murmur.—*Ophth. Review.*

LESION OF THE CHORIOID DUE TO INTESTINAL
INFLAMMATION FROM PTOMAIN
POISONING.

Charles Stedman Bull (*Trans. Am. Oph. Society*, 1905), describes a form of chorioiditis following ptomaine poisoning and evidently the result of this poison, and reports two cases. Both cases had been seized rather suddenly with severe acute intestinal disturbances with other symptoms of poisoning which were followed by an eruption on the skin of a pemphigoid character, paralysis of accommodation, mydriasis and a diminution of vision. There were no scotomata nor peripheral limitations of the visual fields. On examining the eye grounds of both cases he found numerous patches of yellowish-white exudation in the chorioid, of various size and shape, scattered over the fundus. They did not resemble the patches of syphilitic chorioiditis at all. However, a careful inquiry was made, but no history of either congenital or acquired syphilis could be obtained, nor were there any evidences of this disease. Under a tonic treatment of iron, arsenic and strychnin the mydriasis and paralysis of accommodation entirely disappeared, the vision returned to normal and the patches of chorioiditis became paler and in the periphery were scarcely perceptible. At no time was there any deposit of pigment around the patches of exudation.

A DISCUSSION ON RARE FORMS OF CHOROIDITIS.

Held at the 74th Annual Meeting of the British Medical Association at Toronto, Canada.

OPENING PAPERS.

I.—J. B. LAWFORD, F.R.C.S.,

Ophthalmic Surgeon, St. Thomas' Hospital.

[ABSTRACT.]

In his opening remarks Mr. Lawford referred to the wide limits of the subject and to the difficulty in deciding what forms of choroidal disease could be legitimately called "rare," the experience of observers in different countries varying markedly in this respect. His desire in introducing the discussion was to solicit opinions especially as to the ætiology of some forms of choroidal disease, rare in his experience, which he proposed to bring before the meeting.

The first group contained cases of widespread changes in the choroid, closely resembling the common form of disseminated choroiditis of syphilitic origin, and in which syphilis acquired or inherited could be excluded, at least with reasonable certainty. The patients were in most instances adolescents or young adults; the disease generally attacked both eyes, and its ophthalmoscopic features were strikingly similar to those of the syphilitic variety.

The changes were, he thought, more choroidal and less retinal than in the syphilitic disease, and vision was, as a rule, but slightly affected.

He fully recognized the difficulty of obtaining reliable evidence that such cases were not of syphilitic origin, but he felt convinced that disseminated choroiditis occurred from causes other than syphilis.

Among possible causes tubercle, gout, and septic infections of the choroid were considered.

The second rare form of choroiditis was that to which the term "localized exudative choroiditis" might be applied. In this variety there was an acute limited inflammation of the choroid with considerable swelling and exudation.

The overlying retina became hazy and œdematous, and fine changes were present in the vitreous. The disease ran a fairly definite course and terminated in an area of destruction of choroid. It occurred in young adults, and showed a decided tendency to

recurrence. Syphilis probably played no part in its production; tubercle in the patient or in the family was not uncommon.

The third form was "family choroiditis"; the disease attacking two or more members of the same family, and showing considerable variation in type. In some of the published examples the choroidal lesion had been associated with gross disease (paralytic in character) of the nervous system.

II.—CHARLES STEDMAN BULL, M.D.,
NEW YORK.

FORMS OF CHOROIDITIS RESEMBLING THE WELL-KNOWN SYPHILITIC TYPE.

There is a variety of general choroiditis strongly resembling the choroiditis disseminata of constitutional syphilis, but in which it is impossible to discover the slightest evidence of inherited or acquired syphilis as an aetiological factor. Of this variety I have seen a number of cases in which the cause was presumably intestinal intoxication due to ptomaine poisoning. I will give briefly a report of two such cases.

The first case was that of a young girl, aged 14, who had been seriously ill from ptomaine poisoning. The vomiting and diarrhoea were severe, and were accompanied by increased temperature, very rapid pulse, and profound prostration and delirium. Large pemphigoid bullæ appeared on the abdomen and inner surface of the thighs. When the delirium passed away she complained of indistinct vision, which lasted and increased till I saw her six weeks after the attack began. The media were clear, the pupils were widely dilated, and the iris immovable, and there was complete paralysis of accommodation. There was a refractive error of compound myopic astigmatism, and under proper correction the right eye had vision of 15/50 and the left eye vision of 15/30. The optic nerves were pale. Scattered all over the fundus of both eyes were patches of yellowish-white exudation in the choroid, of varying size and shape, very flat, with scarcely any elevation above the general fundus. Some were in the stage of efflorescence, and others in the stage of retrogression. The retinal vessels crossed them without any change in direction or calibre. The older patches were surrounded by a reddish margin, but there were no pigment masses anywhere in the fundus. There was no scotoma in the visual field, and no peripheral limitation. The most rigid personal and family inves-

tigation failed to elicit the slightest evidence of syphilis. This patient was treated by iron, strychnine, and arsenic, and under this treatment the patches of choroiditis began to grow smaller. At the end of three weeks the paralysis of accommodation disappeared, and in three months the vision was restored to the normal. The choroidal patches slowly disappeared, the outlines became very indistinct, and about ten months after I first saw her, all signs of choroidal exudation had disappeared.

The second case was a lady, aged 27, whom I had examined some years before, and prescribed glasses for a compound hypermetropic astigmatism. In other respects the eyes were normal. About two months previously she had been seriously ill with intestinal intoxication from ptomaine poisoning, with high fever, vomiting and purging, delirium, and a general eruption of pemphigus all over the body. On recovering from the violent symptoms she complained of vertigo and great dimness of vision, and on consulting an oculist was told that she had a diffuse choroiditis. When I saw her, two months after the attack, vision was 15/50 in each eye, and there was complete paralysis of accommodation and mydriasis. There were peripheral striæ of opacity in both lenses, and in the choroid numerous flat patches of yellow exudation scattered all over the fundus. These patches were of varying size and shape, with little or no elevation, surrounded by a red margin but with no pigmentary ring, and no deposit of pigment anywhere in the fundus. There was no scotoma and no narrowing of the field. The more recent patches of exudation were around the posterior pole in each eye. The scars of the pemphigoid eruption were still evident. She was very anæmic and a blood examination showed only 75 per cent hæmoglobin, but there was nothing notable in the appearance of the red or white globules. There was a trace of albumen in the urine and a few hyaline casts, but the amount of indican was decidedly increased. In view of the anæmia, iron, arsenic, and strychnine were given continuously for about three months. By that time the mydriasis and paralysis of accommodation had disappeared, the lenses had become entirely clear, vision rose to 15/15, and she read Jaeger No. 1 fluently. The exudative patches in the choroid, which had been bright yellow, had become very pale, the red margins had disappeared, and the outlines became very shadowy. There was no paralysis of any of the extrinsic muscles of the eyes at any time.

These two cases will serve to typify the variety of choroidal inflammation due to autointoxication.

Another variety of choroiditis, or of general uveitis, is that occasionally met with in persons who have been the victims of long-continued or of severe malarial intoxication. These are really cases of general uveitis, for the iris is almost always involved, either primarily or secondarily. There are punctate deposits on the membrane of Descemet, posterior synechiae, but without exudation in the field of the pupil on the anterior lens capsule, and the vitreous is filled with fine dust-like opacities. The turbidity of the vitreous is at times so dense as to obscure all details of the fundus. There is usually no pain, but there is great intolerance of light, and very marked impairment of vision, which at times is reduced to counting fingers. The disease is almost never encountered, except among persons who have been long resident in malarial regions, and who have become saturated by the malarial poison. A careful examination of the blood rarely fails to discover the plasmodium, though not always on the first examination. There is no narrowing of the visual field, no scotoma, and no interference with the color sense. The disease is characterized by extreme chronicity and great obstinacy in resisting treatment. The vision does not begin to improve, nor do the symptoms begin to disappear until large doses of quinine are administered. The usual duration of the disease in those cases which have been under my care has been from three to four months, and I have found it wiser to combine iron and arsenic with the quinine in the treatment, as these patients are almost always very anæmic.—*Brit. Med. Journ.*

ABSTRACTS FROM MEDICAL LITERATURE.

AUTOINTOXICATION IN RELATION TO THE EYE.

G. E. de Schweinitz (*Jr. A. M. A.*, Feb. 9) reviews the literature on this subject, especially referring to the writings of Elschnig and Alonzo Taylor, and gives his own views. He limits the subject to autointoxication of gastro-intestinal origin, due to decomposition of some of the contents of this tract. Diagnostic signs of such decomposition are the presence of phenol and conjugate sulphates, and particularly indican in the urine.

While the cornea, sclera and uveal tract are most frequently affected by such autointoxications, yet the ocular muscles, retina and optic nerve may also suffer. Toxic amblyopia, that is, tobacco-alcohol amblyopia, and other varieties of retrobulbar neuritis may have this condition as an etiologic factor. Summarizing, he says: Although we do not know the entity of a single autointoxication except the acidosis of diabetic coma, and although we know that no known autointoxication is to be attributed to any known end product of any known metabolism, to quote from Alonzo Taylor, we do know, from clinical analogy, at least, that autointoxications exist, even if their true nature is as yet a secret. We do know, too, that after food is swallowed and before the end products of assimilation are eliminated, there may be processes arising under abnormal conditions which yield poisonous products foreign to normal metabolism, the reabsorption of which are followed by definite symptoms. We have reason to believe, in the absence of other causes, that under these conditions ocular troubles may also arise largely in the corneoscleral and uveal tracts, and probably, in so far as the nervous apparatus is concerned, in manifestations to which we apply the term acute or chronic retrobulbar neuritis. We do not know whether these toxins, whatever they may be, actually are the only and sole cause of these conditions, but such examinations as have been made by Elschnig, by Kraus, by Grover, by Edsall and by myself, at least indicate that, to use Elschnig's term, they may be considered accessory causes. As Edsall and I have said, they may be able to play a certain part in the production of the symptoms, and at times are probably the direct cause of their continuance, even when other more commonly accepted etiologic factors have ceased to be active.

RESULTS OF THE EXAMINATION OF STUDENTS' EYES IN THE DEPARTMENT OF PHYSICAL EDUCATION, UNIVERSITY OF PENNSYLVANIA.

William Campbell Posey and R. Tait McKenzie (*Jr. A. M. A.*, March 23) report the results of the examination of students' eyes during 1905-1906. These examinations were supplementary to a study of the entire physical condition of each student. The results of the ocular examination are not only of value to the students who were thus advised of the condition of their eyes but from a statistical standpoint are of value to ophthalmologists.

as well as educators, as showing the effect of school and college work upon the eyes. The authors say:

Of the value of such tests there can be no doubt, as statistics will testify, for even though the examinations had demonstrated to but a dozen students that their eyes were defective, the importance of such tests could not be questioned; but when it is appreciated that 30.34 per cent of the students who were examined had defective vision in one or both eyes, all doubts as to their propriety must be dispelled. Eight hundred and eighty three students were examined in all. Of these, 640 were students in the college department, 108 in the medical, 81 in the dental, 51 in the law and 3 in the veterinary department. Of this total, 14.70 per cent were noted as being myopic, while the remaining 85.30 per cent were either hypermetropic or emmetropic.

In the comparison which was made to ascertain the influence of age and study on the refraction, it was found that among 633 students in the two lower classes, 87.25 per cent were hypermetropic and 12.75 per cent were myopic, while 261 students in the upper classes, 80.25 per cent were hypermetropic and 19.75 were myopic.

Five per cent more of myopia was found in the professional department in scholars of a similar age than in the college department, this being doubtless accounted for by the fact that most of the scholars in the college come from private or city schools, where the eyes are properly protected, while the scholars in the professional schools come frequently from rural communities, where accurate refraction is impossible and the care of the eyes neglected. The average age of all the scholars examined was 21.4 years, and the statistics showed an increase of about 2.5 per cent of myopia for each year during the four years of college life.

Of the students examined, 609 had full visual acuity in each eye, 94 had full visual acuity in but one eye, while 180 had subnormal vision in both. In this latter class, 180 students, possessing subnormal vision in both eyes, were thus under a decided disadvantage in the performance of certain forms of class-room work, irrespective of any possible ill effects to the eyes from uncorrected strain, while in the 94 students who possessed normal vision in but one eye, the student was perceptibly handicapped in the proper use of all scientific instruments. Three hundred and three students wore glasses, of these 217 were hypermetropic and 86 myopic. Eighty-seven complained of headache. Of this number, 47 wore glasses and 40 did not. Of those complaining

of headache, 7.59 per cent had subnormal vision, while the remaining 92.41 per cent had full visual acuity, and on this account did not suspect their eyes of being at fault.

Of the 883 students examined, 58, or 6.68 per cent, had spinal curvature or scoliosis, and this condition was found 48 times among hypermetropes and 10 times among myopes. Of the total number of students with spinal curvature, the vision of one eye was perceptibly lower than its fellow in 13.79 per cent, supporting the inference of many ophthalmologists that ocular errors may be responsible in many cases for this abnormality.

The figures which have just been given are only a few which have been compiled from the statistics deducted from the examinations, but they serve in our opinion to indicate the importance of including careful ocular tests as a part of the physical examination of every student, and to show the value of the advice which is offered regarding the correction of existing errors. As weak eyes are often associated with a physical condition which is below par, suitable exercise of a general nature is also insisted on for those who are so handicapped, and a determined effort is made by the department to enable such students to profit as much as is possible by their college careers. Violent exercises are forbidden myopes, and the endeavor is made in this class of subjects particularly to develop the chest and to impart a correct standing posture for the avoidance of scoliosis.

CONJUGATE DEVIATION OF THE EYES AND HEAD AND DISORDERS OF THE ASSOCIATED OCULAR MOVEMENTS IN TUMORS AND OTHER LE- SIONS OF THE CEREBRUM.

T. H. Weisenburg (*Jr. A. M. A.*, March 23) discusses the various views on this subject, presents a brief report of sixteen of his cases and offers the following conclusions:

1. Conjugate deviation of the eyes and of the head is dependent on a most complex mechanism.
2. In the human being there is but one oculomotor center, or at least one active functioning center, situated in the posterior portion of the second and third frontal convolutions, adjacent to the precentral convolutions.
3. A separate center exists for the movements of the head, probably in the lower anterior portion of the precentral convolution.

4. There is probably in man a distinct center for the combined movements of the eyes and head, situated in the area between the head and the eye centers.

5. It is probable that the cortical oculomotor, head and combined head and eye centers are subdivided for lateral as well as for upward and downward movements.

6. The oculomotor and the motor head centers are in connection by means of association fibers with the cortical centers for the special senses, in the temporal, occipital, uncinate and other lobes.

7. Any lesion in the motor centers for the eyes and head or in the related special sense centers or in the association fibres connecting the former with the latter will cause an impairment in voluntary deviation of the eyes or of the head, or of both, this depending on the nature and location of the lesion.

8. Lesions in the angular gyrus cause conjugate deviation because of involvement of visual and auditory fibres which lie underneath this area.

9. The theory of Bard that conjugate deviation of the eyes and head is always or nearly always accompanied by homonymous lateral hemianopsia and dependent on this is an error, for in the majority of instances hemianopsia does not exist.

10. Hemianopsia may be caused by the shock or transient effects of the hemorrhage, this loss of half vision being only a temporary symptom and similar in nature to the temporary hemianesthesias sometimes observed in capsular lesions.

11. The occurrence of conjugate deviation of the eyes or of the head, or of both, is of no value as a focalizing symptom, because it may be the result of a lesion in any portion of the cerebrum. It may be of value, however, in conjunction with other localizing symptoms.

12. Conjugate deviation of the eyes and head probably occurs in every case of large apoplectic lesions, but in some instances it is a partial or minor form and of transient duration.

13. Paralysis or impairment of associated ocular movement may occur as a result of a hemianopsia. This, however, is only temporary.

14. There is at present no evidence of a center or centers for automatic ocular movements, but if such centers exist in the thalamus a lesion of these should cause forced or incoördinate ocular movements.

15. Convergence and divergence are probably not reflex acts, but associated ocular movements similar to lateral and upward movements. They probably have cortical centers in the posterior portion of the second and third frontal convolutions. The movements of convergence and divergence are probably brought about by associating tracts in the pons and cerebral peduncles.

THE RIPENING OPERATION FOR IMMATURE SENILE CATARACT; ITS PLACE.

Frank C. Todd (*Jr. A. M. A.*, March 9) discusses the indications and contraindications for this operation, and the objections to it. In order to get the most recent opinions of operators of prominence in the United States, he addressed inquiries to many of them and received replies from sixty-nine. Of these twenty-six still do the operation when occasion demands, four rarely perform it; while nineteen who have had some experience do not now practice it at all, preferring to extract the immature cataract and remove loose cortical substances by irrigation. The methods of ripening immature cataracts are:

1. Puncture of the anterior capsule combined with iridectomy (Mooren, 1858).
2. Puncture of the capsule combined with trituration (Rhomer, 1886).
3. Preliminary iridectomy with trituration through the cornea, indirect trituration (Foster, 1881).
4. Trituration after a simple paracentesis without iridectomy (T. R. Pooley operated on rabbit, 1885, and soon after J. A. White operated by this method on a human being).
5. Paracentesis, with or without iridectomy, and direct trituration on the anterior capsule (Ricald, 1888, and Bettman, 1892).

Todd concludes thus: If, therefore, we grant the success and safety claimed by those of much experience in irrigation, the operation of ripening is indicated:

1. In cases of immature cataract (not mentioned as contraindicated), in which a preliminary iridectomy is to be performed.
2. In those patients who would not be likely to behave well during extraction, thus preventing the operator from performing much toilet or from practicing irrigation.

If irrigation is not practiced, trituration of the lens would be indicated in all patients with immature senile cataract under 60, in whom for reasons mentioned relief is required.

THE RELATION OF EYE-STRAIN TO CHRONIC HEADACHE.

S. W. S. Toms (*J. A. M. A.*, March 23), from a study of his records of 1,280 cases in which he examined the eyes, feels justified in stating that 90 per cent of all persons suffering with chronic headache have ocular defects. He says:

"Over 80 per cent of the 1,280 cases had some form of headache, periodical and chronic; 15 per cent had typical migraine. Only 5 per cent had discoverable organic lesions that possibly intensified or was partly to blame for the head pains. Of these, one-half of 1 per cent had some form of chronic nephritis (diagnosed or suspected by appearance of the eye grounds). A few cases of diabetes mellitus and three cases of brain tumor were recognized by the ophthalmoscope. One-fourth of 1 per cent had absolutely emmetropic eyes, but with muscular anomalies. Twenty per cent had gastrointestinal or hepatic functional derangements, the resulting toxic anemia being coincidentally relieved or greatly benefitted after the ocular reflexes were corrected. Fully 50 per cent of the sufferers had but slight refractive errors or muscular imbalance."

Seventy-five per cent of his cases that were relieved received no other treatment than properly adjusted glasses or the treatment necessary for the muscular imbalance. He emphasizes the importance of recognizing *subnormal accommodation* in young persons and believes this is frequently overlooked.

In conclusion he notes the fact that while in good health, with no special demand on the nervous system, an individual with even considerable error of refraction or muscular imbalance may have no symptoms of eye-strain, yet such a person, if debilitated by sickness, or others with much smaller defects who have unstable nervous systems, will suffer with some functional disturbance which will always manifest itself at some weak point.

UNIOCLAR INFLAMMATIONS OF THE OPTIC NERVE AND THE RETINA.

Alvin A. Hubbell (*Jr. A. M. A.*, July 7, 1906), states that from a study of ophthalmic text-books and literature one would be led to think that unioctular inflammations of the optic nerve and retina was a rare occurrence, which, from his experience of twenty-five years in ophthalmic practice, he believes is not the case. From his records of the past fifteen years he gathers

eighteen cases which he arranges in three classes: first, those of uniocular optic neuritis; second, those of uniocular neuroretinitis; and third, those of uniocular retinitis. Of the eighteen cases four belong to the first class and all of them were apparently in good health. Their ages varied from sixteen to forty-three years. In three of them the neuritis was intraocular and in one retro-ocular. In all of them recovery followed with normal or nearly normal sight. Four cases, two males and two females, belonged to the second class, one being twenty-four years of age and the other three being over sixty. One had renal calculi and one had chronic albuminuria with questionable general arteriosclerosis. In three cases the vision of the affected eye was practically lost by atrophy, while in one recovery with nearly normal vision followed. In the remaining ten cases apparently the retina only was inflamed. Three mild cases recovered, with no visible lesion remaining and with nearly normal vision. In one the vision was lost while in the remaining six cases the disease has not yet subsided or the result is unknown. Six of these ten patients were apparently in good health while three were subjects of arteriosclerosis and one had valvular heart disease and had some symptoms of cerebral hæmorrhage. Thus in the majority of the eighteen cases there was no known systemic disease which could be assigned as the cause of these inflammations.

Hubbell says in conclusion that in quite a large experience of a quarter of a century in ophthalmology he has never seen a case of optic neuritis that was not uniocular, except when there was syphilis or brain tumor. He has never seen a case of neuroretinitis or of retinitis that was not uniocular, except when there was double orbital cellulitis, Bright's disease, diabetes mellitus or syphilis, and then it was typical of these diseases, and even in two albuminuric cases and one of nephritic inflammation, the inflammation was uniocular.

His treatment has usually been the giving of potassium iodid and he believes that it was beneficial in some cases while in others it did not seem to be.